

FLEXIBLE MULTIMODE QAM MODULATOR

ABSTRACT

5 A method of baseband/passband digital modulation for a data transmission system wherein a plurality of data symbols is transmitted over a transmission channel at a symbol rate. The method comprises the following steps: (1) generating a plurality of I and Q components of symbols by mapping an input bit stream comprising a plurality of digital codewords into a QAM constellation; (2) 10 selecting a passband or a baseband mode; and (3) generating an analog output signal in the passband or baseband mode. The step of selecting the passband or the baseband mode depends on the complexity of QAM constellation. If QAM constellation includes less than 64 QAM plant points, the passband mode is selected, and if QAM constellation includes more than 64 QAM plant points, the 15 baseband mode is selected. If the QAM constellation includes less than 64 QAM plant points, initially selecting the passband mode until a D/A conversion speed reaches a maximum passband conversion speed, and until an output symbol rate reaches a maximum passband symbol output rate, and subsequently switching to the baseband mode in order to double the maximum passband conversion speed and to double the maximum passband symbol output rate. 20